

## PATENT COOPERATION TREATY

## PCT



## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 20 AUG 2004

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Applicant's or agent's file reference 81527-18		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/CA 03/00574	International filing date (day/month/year) 17.04.2003	Priority date (day/month/year) 19.04.2002	
International Patent Classification (IPC) or both national classification and IPC G11C13/02			
Applicant UNIVERSITY OF SASKATCHEWAN TECHNOLOGIES INC. ET AL			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of    sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I    <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II    <input type="checkbox"/> Priority</p> <p>III    <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV    <input type="checkbox"/> Lack of unity of invention</p> <p>V    <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI    <input type="checkbox"/> Certain documents cited</p> <p>VII    <input type="checkbox"/> Certain defects in the international application</p> <p>VIII    <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand  13.11.2003		Date of completion of this report  19.08.2004	
Name and mailing address of the International preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer  Colling, P  Telephone No. +31 70 340-4429 	

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/CA 03/00574

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-23 as originally filed

**Claims, Numbers**

1-14 as originally filed

**Drawings, Sheets**

1/10-10/10 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	1-14
	No: Claims	
Inventive step (IS)	Yes: Claims	1-13
	No: Claims	14
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Reference is made to the following documents:**

D1: US-A-6 015 714 (AKESON MARK ET AL) 18 January 2000 (2000-01-18);

D2: WO 99 31115 A (UNIV SASKATCHEWAN ;AICH PALOK (CA); LEE JEREMY S (CA)) 24 June 1999 (1999-06-24).

**2. The subject-matter of claims 1-13 meet the requirements of the PCT with respect to novelty, inventive step and industrial applicability.**

**3. The subject-matter of independent apparatus claim 14 does not meet the requirements of Article 6 PCT because the matter for which protection is sought is not clearly enough defined and do not enable the skilled person to determine which technical features are necessary to perform the stated function of storing information.**

**4. Furthermore the subject-matter of independent apparatus claim 14 does not involve an inventive step (Article 33(3) PCT):**

Document D1, which is considered to represent the closest prior art document, discloses (see column 6, lines 9 - 42; column 7, line 13 - column 8, line 6 and Figures 1-3; the references in parentheses applying to this document) a device suitable for storing information comprising a nucleic acid duplex (a DNA molecule) housed in the lumen of a channel formed in a membrane (passing through a channel pore of a membrane).

Claim 14 thus differs from D1 **only** in that said device comprises a **metal-containing** nucleic acid duplex.

The problem to be solved by the present invention could therefore be regarded as the provision of nucleic acid molecules with improved electrical conductance.

The inclusion of a metal in nucleic acids in order to improve electrical conductance is however known from D2 (see page 3, line 14 - page 5, line 13) and the skilled person

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would regard it as a normal option to replace the nucleic acid duplex of D1 by the metal-containing nucleic acid of D2 in order to solve the problem posed.

Thus independent apparatus claim 14 (as far as it can be understood: see point 3 above) cannot be considered as involving an inventive step.